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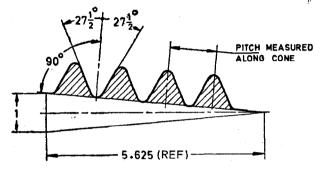




Indian Standard

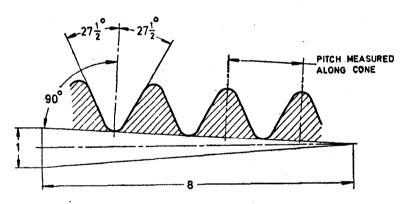
SPECIFICATION FOR INSPECTION GAUGES FOR CHECKING THREADS OF GAS CYLINDER VALVES FOR USE WITH BREATHING APPARATUS

- 1. Scope Prescribes dimensions, tolerances, material requirements of inspection gauges recommended for checking the taper threads on the valve stems and the threads in the cylinder necks of valve fittings conforming to IS: 7302 1974 'Specification for valve fittings for gas cylinder valves for use with breathing apparatus'.
- 2. Thread Form As shown in Fig. 1 to 4.



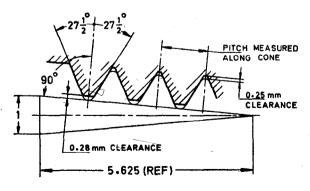
(Whitworth form, normal to surface of cone)

FIG. 1 FORM OF THREAD FOR 15:24 mm GAUGE A AND 15:24 mm GAUGE E



(Whitworth form, normal to surface of cone)

FIG. 2 FORM OF THREAD FOR 18:16, 25:40 AND 31:75 mm GAUGES A AND E



(Whitworth form, normal to surface of cone)

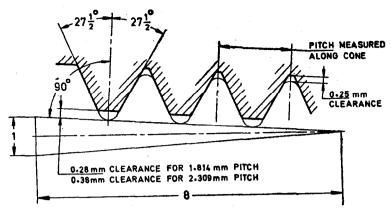
FIG. 3 FORM OF THREAD FOR 15-24 mm GAUGE B AND 15-24 mm GAUGE F

Adopted 16 January 1974

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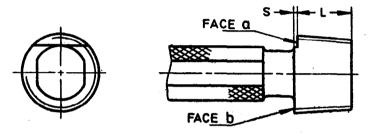


(Whitworth form, normal to surface of cone)

FIG. 4 FORM OF THREAD FOR 18:16, 25:40 AND 31:75 mm GAUGES B AND F

3. Dimensions and Tolerances of Gauges for Checking Threads in Cylinder Neck

3.1 Full Form Plug Screw Gauge, for Checking Thread in Cylinder Neck, Gauge A



(For form of thread see Fig. 1 or 2)

All dimensions in millimetres.

Nominal* Size	Dimension	Nominal Tolera Value		ance	Taper
İ			Plus	Minus	
15.24	Major diameter at face a	19-192	0	0.015	1 in 5.625 on
	Pitch diameter at face a	18.032	0	0.015	diameter
	Minor diameter at face a	16.871	0	0.023	
	· s	1.19	0.03	0	
	L	22.22	0.25	0.25	
18.16	Major diameter at face a	20.142	0	0.015	1 in 8 on
	Pitch diameter at face a	18-979	0	0.015	diameter
	Minor diameter at face a	17.816	0	0.023	1
	s	1.19	0.03	0	
	L	15.88	0.25	0.25	
25.40	Major diameter at face a	27.788	0	0.015	1 in 8 on
]	Pitch diameter at face a	26.624	0	0.015	diameter
•	Minor diameter at face a	25.461	.0	0.023	}
	S	1.19	0.03	0	İ
	L	19-05	0.25	0.25	
31.75	Major diameter at face a	34.925	0	0.023	1 in 8 on
1	Pitch diameter at face a	33.444	0	0.023	diameter
1	Minor diameter at face a	31.963	0	0.035	
1	S	1.60	0.03	0	1
	L	25-40	0.25	0.25	

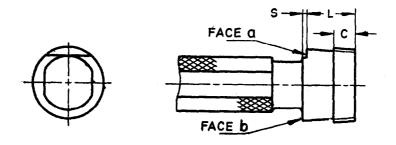
Note 1 — The pitch diameter should not fall below the minimum value stated. After adding to this measured size the diametral equivalent of any errors present in the flank angles, the result should not exceed the maximum value stated for the pitch diameter.

Note 2 — The tolerance for pitch is 0-005 mm, and this is the maximum error permitted in the relative axial positions of any two threads along the length of the gauge. The error may be plus or minus.

Note 3 — The gauge is so designed that when pressed or screwed home by hand, the neck of the cylinder, or the stem of the cylinder valve, should lie flush with or protrude beyond face a, but not beyond face by

^{*}Represents the maximum major diameter at the small end of the valve stem.

3.2 Plug Screw Gauge for Checking Pitch Diameter of Thread in Cylinder Neck, Gauge B



(For form of thread see Fig. 3 or 4)

All dimensions in millimetres.

Nominal* Size	Dimension	Nominal Value	Tolei	rance	Taper
	*		Plus	Minus	
15.24	Pitch diameter at face a	18.032	0	0.015	1 in 5.625 on
	S	1.19	0.03	0	diameter
	<u>L</u>	12.70	0.25	0.25	
-	С	7.94	0.25	0.25	
18·16	Pitch diameter at face a	18-979	0	0.015	1 in 8 on
.0.0	S	1.19	0.03	0	diameter
	. L	12.70	0.25	0.25	
	С	7.94	0.25	0.25	
25:40	Pitch diameter at face a	26.624	0	0.015	1 in 8 on
	s	1.19	0.03	0	diameter
	L	17.46	0.25	0.25	
	. с	7.94	0.25	0.25	
31.75	Pitch diameter at face a	33.444	0	0.023	1 in 8 on
31,70	S	1.60	0.03	0	diameter
	Ĺ	22.22	0.25	0.25	1
	С	9.52	0.25	0.25	1

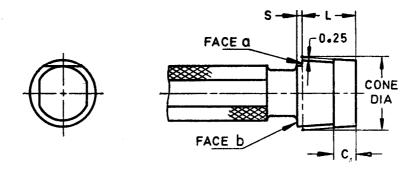
Note 1 — This pitch diameter gauge is intended to operate about half way along the thread in the cylinder neck.

Note 2 — The pitch diameter should not fall below the minimum value stated. After adding to this measured size the diametral equivalent of any errors present in the flank angles, the result should not exceed the maximum value stated for the effective diameter.

Note 3 — The gauge is so designed that when pressed or screwed home by hand the neck of the cylinder, or the stem of the cylinder valve, should lie flush with or protrude beyond face a, but not beyond face b.

^{*}Représents the maximum major diameter at the small end of the valve stem.

3.3 Plain Plug Gauge for Checking Minor Diameter at Small End of Taper in Cylinder Neck, Gauge C



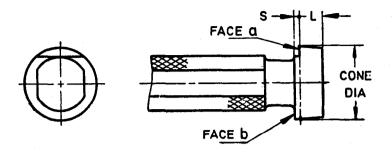
All dimensions in millimetres.

Nominal* Size	Dimension	sion Nominal Value		rance	Taper
:			Plus	Minus	
15.24	Cone diameter at face	a 16.871	0	0.015	1 in 5⋅625 on
		S 1.19	0.03	0	diameter
		L 22.22	0.25	0.25	,
		C 7.94	0.25	-0∙25	
18-16	Cone diameter at face	a 17·816	0	0.015	1 in 8 on
		S 1.75	0.03	0	diameter
٠.		∠ 15·88	0.25	0.25	
		C 7.94	0∙25	0.25	
25.40	Cone diameter at face	a 25·461	0	0.015	1 in 8 on
		S 1.75	0.03	l 0	diameter
		∠ 19·05	0⋅25	0.25	
!		C 7.94	0∙25	0∙25	
31.75	Cone diameter at face	a 31.963	0	0.023	1 in 8 on
		\$ 2.31	0.03	0	diameter
		L 25.40	0.25	0.25	
		C 9.52	0.25	0.25	

Note — The gauge is so designed that when pressed or screwed home by hand the neck of the cylinder, or the stem of the cylinder valve, should lie flush with or protrude beyond face a, but not beyond face b.

^{*}Represents the maximum major diameter at the small end of the valve stem.

3.4 Plain Plug Gauge for Checking Minor Diameter at Large End of Taper in Cylinder Neck, Gauge D



All dimensions in millimetres.

Nominal*	Dimension	Nominal Value	Tolerance		Taper
			Plus	Minus	
15-24	Cone diameter at face	1 1	0 0·03 0·25	0·015 0 0·25	1 in 5-625 on diameter
18-16	Cone diameter at face		0 0·03 0·25	0·015 0 0·25	1 in 8 on diameter
25·40		25·461 5 1·75 7·94	0 0·03 0·25	0·015 0 0·25	1 in 8 on diameter
31.75		31·963 S 2·31 L 9·52	0 0·03 0·25	0·023 0 0·25	1 in 8 on diameter

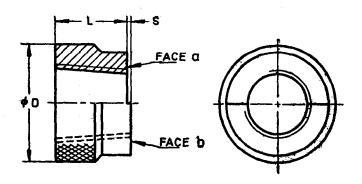
Note — The gauge is so designed that when pressed or screwed home by hand the neck of the cylinder, or the stem of the cylinder valve, should lie flush with or protrude beyond face a, but not beyond face b.

^{*}Represents the maximum major diameter at the small end of the valve stem.

IS: 7202 - 1974

4. Dimensions and Tolerances of Gauges for Checking Threads on Taper Stem

4.1 Full Form Ring Screw Gauge for Checking Thread on Taper Stem, Gauge E



(For form of thread see Fig. 1 or 2)

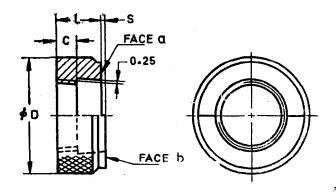
All dimensions in millimetres.

Nominal*	Dimension	Nominal Value	Tole	Taper	
ļ			Plus	Minus	
15·24	Major diameter at face a	15-240	0.023	0	1 in 5-625 on
*	Pitch diameter at face a	14.079	0.015	0	diameter
1	Minor diameter at face a	12.918	0.015	0	
ļ	S	1.19	0.03	0	
į	L	22-22	0.25	0.25	
	D	44.45	1.59	1.59	
18-16	Major diameter at face a	18-161	0.023	0	1 in 8 on
	Pitch diameter at face a	16.998	0.015	اه	diameter
	Minor diameter at face a	15.834	0.015	0	1
	S	1.19	0.03	i o	
	L	19.05	0.25	0.25	
	D	44.45	1.59	1.59	
25.40	Major diameter at face a	25.400	0.023	0	1 in 8 on
	Pitch dia neter at face a	24-237	0.015	0	diameter
	Minor diameter at face a	23.073	0.015	0	
	S	1.19	0.03	0	
	L	28.22	0.25	0.25	
	D	44.45	1.59	1.59	
31.75	Major diameter at face a	31.750	0.036	0	1 in a on
• • • • • • • • • • • • • • • • • • • •	Pitch diameter at face a	30.269	0.023	o	diameter
	Minor diameter at face a	28.788	0.023	o	
	S	1.60	0.03	0	
	L	28.58	0.03	0.25	
	D	50.80	1.59	1.59	

Note — The gauge is so designed that when pressed or screwed home by hand the neck of the cylinder, or the stem of the cylinder valve, should lie flush with or protrude beyond face a, but not beyond face b.

^{*}Represents maximum major diameter at the small end of the valve stem.

4.2 Screw Ring Gauge for Checking Pitch Diameter of Taper Stem, Gauge F



(For form of thread see Fig. 3 or 4)

All dimensions in millimetres.

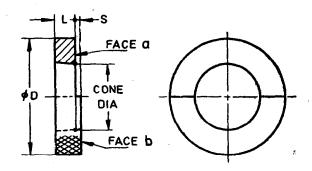
Nominal*	Dimension	Nominal Value	Tolerance		Taper
0,20			Plus	Minus	
15.24	Pitch diameter at face a	14.079	0.015	0	1 in 5·625 on
	S	1.19	0.03	0	diameter
	L	12.70	0.25	0.25	
· .	C	7.94	0.25	0.25	
1	D	44.45	1.59	1.59	·
18-16	Pitch diameter at face a	16-998	0.015	0	1 in 8 on
	S	1.19	0.03	0	diameter
	L	15.88	0.25	0.25	· ·
	C	7.94	0.25	0.25	
	D	44-45	1.59	1.59	
25.40	Pitch diameter at face a	24.237	0.015	0	1 in 8 on
	S	1.19	0.03	0	diameter
	L	17.46	0.25	0.25	
	. c	7.94	0.25	0.25	1
	<i>D</i>	44.45	1.59	1.59	
31.75	Pitch diameter at face a	30-269	0.023	0	1 in 8 on
	S	1.75	0.03	0	diameter
	L	22.22	0.25	0.25	
	. C	9.52	0.25	0.25	
	D	50-80	1.59	1.59	

Note 1 — This pitch diameter gauge is intended to operate about half way along the thread on the stem,

Note 2 — The gauge is so designed that when pressed or screwed home by hand the neck-of the cylinder, or the stem of the cylinder valve, should lie flush with or protrude beyond face a, but not beyond face b.

^{*}Represents the maximum major diameter at the small end of the valve stem.

4.3 Plain Ring Gauge for Checking Major Diameter at Small End of Taper Stem, Gauge G



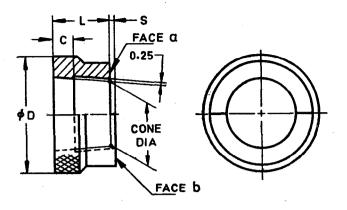
All dimensions in millimetres.

Nominal* Size	Dimension	Nominal Value	Toler	rance	Taper
			Plus	Minus	
15-24	Cone diameter at face a	15-240	0.015	0	1 in 5·625 on
	S	1.94	0.03	0	diameter
	L	7.94	0.25	0.25	
	D	44.45	1.59	1.59	
18-16	Cone diameter at face a	18-160	0.015	0	1 in 8 on
	s	1.75	0.03	0	diameter
ļ	. L	7-94	0.25	0.25	
	<i>D</i>	44-45	1.59	1-59	
25-40	Cone diameter at face a	25-400	0.015	0	1 in 8 on
	s	1.75	0.03	o	diameter
	L	7.94	0.25	0.25	
	4 , D	44.45	1 ·59	1.59	
31.75	Cone diameter at face a	31.750	0.023	0	1 in 8 on
	s	2-31	0.03	0	diameter
	L	9.52	0.25	0.25	
	D	50.80	1.59	1.59	

Note — The gauge is so designed that when pressed or screwed home by hand, the neck of the cylinder, or the stem of the cylinder valve, should lie flush with or protrude beyond face a, but not beyond face b.

^{*}Represents the maximum major diameter at the small end of the valve stem.

4.4 Plain Ring Gauge for Checking Major Diameter at Large End of Taper Stem, Gauge H



All dimensions in millimetres.

Nominal *	Dimension	Nominal	Tolerance		Taper
Size		Value	Plus	Minus	
15.24	Cone diameter at face	a 15·240	0.015	0	1 in 5·625 or
		S 1·19	0.03	0	diameter
		L 22·22	0.25	0.25	
		C 7.94	0.25	0.25	1
	•	D 44·45	1.59	1.59	
18·16	Cone diameter at face	a 18·160	0.015	0	1 in 8 on
		S 1.75	0.03	ا	diameter
		£ 19·05	0.25	0.25	1
		C 7.94	0.25	0.25	ļ
		D 44·45	1.59	1.59	
25.40	Cone diameter at face	25.400	0.015	0	1 in 8 on
		S 1.75	0.03	0	diameter
		L 22·22	0.25	0.25	
		C 7.94	0.25	0.25	
		D 44·45	1 ∙59	1.59	
31.75	Cone diameter at face	a 31·750	0.015	0	1 in 8 on
		S 2.31	0.03	ō	diameter
		L 28·58	0.25	0.25	
		C 9·52	0.25	0.25	1
		D 50·80	1.59	1.59	

Note — The gauge is so designed that when pressed or screwed home by hand, the neck of the cylinder, or the stem of the cylinder valve, should lie flush with or protrude beyond face a, but not beyond face b.

^{*}Represents the maximum major diameter at the small end of the valve stem.

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- 5. Material Suitable wear resisting steel, for example, C 85 of IS: 1570-1961 'Schedules for wrought steels for general engineering purposes' or suitable case hardening steel, for example, C 15 of IS: 1570-1961.
- 6. General Requirements of Gauging Surfaces
- **6.1** Hardness 750 HV minimum determined according to IS: 1501-1968 'Method for Vickers hardness test for steel (first revision)' or its equivalent.
- **6.2** Surface Roughness of Gauging Portion 0.2 microns (Ra value) determined according to 1S: 3073-1967 'Specification for assessment of surface roughness'.
- **6.3** Finish Ground, lapped and suitably stabilized. Method of stabilizing left to the discretion of the manufacturer. Surfaces other than gauging surface to be finished smooth.
- 7. Designation The gauges shall be designated by the following:
 - a) Nominal size of valve, and
 - b) Gauge type and number of this standard.

Example:

A screw ring gauge for testing pitch diameter of taper stem for 18·16 mm valve size will be designated by 18·16 mm Gauge F, IS: 7202.

- 8. Marking The gauge shall be marked with the following:
 - a) Nominal size of valve.
 - b) Gauge type and number of this standard,
 - c) Manufacturer's name or trade-mark, and
 - d) Serial number.
- 8.1 ISI Certification Marking Details available with the Indian Standards Institution.
- 9. Corrosion Protection and Packing Shall be protected against climatic conditions by application of any anti-corrosive coating. Packing should be suitable to prevent damage in transit.

This standard is based on BS 341: Part 2: 1963 Specification for valve fittings for compressed gas cylinders: Part 2 Valves with taper stems for use with breathing apparatus.